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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,857

07/12/2006

Masaki Suzuki

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EXAMINER

LIU, LI

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,857	Applicant(s) SUZUKI ET AL.	
	Examiner LI LIU	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :07/12/2006,10/30/2006,08/20/2008 .

DETAILED ACTION

1. Claims 1-20 are pending.

Information Disclosure Statement

2. The information disclosure statement(s) (IDS) submitted on 07/12/2006, 10/30/2006, and 08/20/2008 is/are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information referred to therein has been considered by the examiner.

Drawings

3. Figures 8, 9 and 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

5. Claims 9, 15, and 19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 9, 15, and 19 define a computer program embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason. The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program.

6. Claims 8, 14, and 18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 8, 14, and 18 are drawn to methods. Normally, the claims would be statutory. However, the specification at page 20, 34 and 39 also defines the claimed method as pure software

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implementation. The software implementation of the method may include just solely computer software which is non-statutory subject matter.

Because the full scope of each of the claims as properly read in light of the disclosure appears to encompass non-statutory subject matter, the claim as a whole is non-statutory. Any amendment to the claims should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 112, second paragraph

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 8, 9, 11, 14, 15 (and by extension, all claims depending therefrom) are indefinite for reciting at least one of the following limitations:

*mode selection means for adaptively **selecting**, for each frame, **a first coding mode** using inter-frame correlation **and** **a second coding mode** of coding a frame separately;*

*computation means for extracting predicted data from a locally decoded previous frame on the basis of a block image obtained by segmentation by said segmentation means and outputting a block obtained by subtracting the predicted data from the segmented block image in the first coding mode, **and** outputting a block segmented by said segmentation means in the second coding mode;*

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It is unclear whether both coding modes are selected or only one coding mode is selected for each frame. In consequence, if the first coding mode is selected, will "outputting a block segmented by said segmentation means" still be performed?

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaga et al. (hereafter referred to as "Fukunaga", US 6169821, IDS), in view of Tong et al. (hereafter referred to as "Tong", US 5982435, IDS), and further in view of Kishi (US 2002/0031182, IDS).

Regarding claim 1, Fukunaga discloses a moving image coding apparatus which sequentially inputs and codes image data of frames constituting a moving image (**Fukunaga, Fig. 1**), comprising:

mode selection means for adaptively selecting, for each frame, a first coding mode using inter-frame correlation and a second coding mode of coding a frame separately (**Fukunaga, Fig. 1, numeral 306 is the Intra/Inter decision unit**);

segmentation means for segmenting image data of an input frame into a plurality of blocks (**Fukunaga, col. 9, lines 34-40**);

decoding means for locally decoding coded image data in accordance with an output from said mode selection means (**Fukunaga, Fig. 1, output from Intra/Inter decision unit 306 feeds to decoding unit 303**);

computation means for extracting predicted data from a locally decoded previous frame on the basis of a block image obtained by segmentation by said segmentation means and outputting a block obtained by subtracting the predicted data from the segmented block image in the first coding mode (**Fukunaga, Fig. 21 and col. 1, lines 30-44, the inter-frame or P-frame coding are predicted from the preceding frames**), and outputting a block segmented by said segmentation means in the second coding mode (**Fukunaga, Fig. 21 and col. 1, lines 30-44, the intra-frame or I-frame coding**);

Fukunaga does not expressly disclose the computation details of subtracting the predicted data from the block. Fukunaga does not disclose rounding down coded data from a least significant bit to adjust an amount of code data.

In the same field of endeavor, Tong discloses an image coding apparatus which performs discrete wavelet transform (DWT) to blocks obtained by subtracting the predicted data from the block image data (**Tong, Fig. 7**), and Kishi discloses an image coding device which generates intermediate code data for each bitplane comprising bit information at each bit position which represents each frequency component value (**Kishi, Fig. 1C and Fig. 10**), adjusting a code data amount by rounding down coded data from a least significant bit position to an upper bit position (**Kishi, Fig. 10, deleting in ascending order with code of lowest bit plane deleted first**), and outputting adjusted code data (**Kishi, Fig. 12**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Tong and Kishi with that of Fukunaga to yield the invention as described in claim 1, because both coding an inter-frame with reference to a preceding I-frame, and bitplane round down to adjust the amount of coded data are well-known in the art, the claimed invention is merely a combination of old elements, and in the combination each element merely would have performed the same function as it did separately, and one of ordinary skill in the art would have recognized that the results of the combination were predictable.

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Regarding claim 2, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 1, wherein said decoding means locally decodes only image data coded in the second coding mode (**Fukunaga, Fig. 1, unit 303 decodes only intra-frame to be used as reference frame**).

Regarding claim 3, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 1, wherein the locally decoded frame to be referred to by said computation means comprises a locally decoded image of image data computed in the second coding mode (**Fukunaga, Fig. 1, unit 303 decodes only intra-frame to be used as reference frame**).

Regarding claim 4, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 1, wherein said transformation means comprises discrete wavelet transformation (**Tong, Fig. 7, unit 114, or Kishi, Fig. 1C, unit 110**).

Regarding claim 5, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 1, further comprising instruction means for instructing whether or not to round down code data of bitplanes by using said adjusting means (**Kishi, Fig. 15, Steps 1505 and 1506**).

Regarding claim 6, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 1, that wherein said mode selection means selects the

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second coding mode for a frame which is input for the first time after the number of input frames becomes a predetermined number (**Fukunaga, col. 5, lines 19-24, “...intra-frame coding is selected at regular intervals (once every thirty frames, for example)...”**).

Regarding claim 7, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 1, wherein said decoding means locally decodes code data adjusted by said adjusting means (**as stated in the analysis of claim 1, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the bitplane round down technique into Fukunaga’s method**).

Regarding method claim 8, program claim 9, and medium claim 10, the limitations of the claims are rejected for the same reasons as set forth in the rejection of claim 1 above.

Regarding claim 11, it is the same as claim 1 except that claim 11 further contains a storage means and updating means. However, Fukunaga still reads on the additional limitations:

storage means for storing at least one-frame image data (**Fukunaga, Fig. 1, reference frame memory unit 305**);

updating means for updating said storage means with image data obtained by locally decoding code data generated by said coding means when the second coding

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mode is selected by said mode selection means (**Fukunaga, Fig. 1, units 305 and 309**).

Therefore, claim 11 will be analyzed in the same way as claim 1.

Regarding claim 12, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 11, wherein said coding means outputs code data $C(N_{\max})$, $C(N_{\max}-1)$, . . . , $C(N_{\max}-k)$ as effective code data up to a maximum value k satisfying $\sum L(C(N_{\max}-k)) \leq T$ where N_{\max} is a bit position of a most significant bitplane, $C(i)$ is code data of i th bitplane, $L(C(i))$ is a code data amount, and T is a threshold representing an allowable code amount of one frame, and discards code data $C(0)$, . . . , $C(N_{\max}-k-1)$ (**Fukunaga, Figs. 10 and 15, bitplanes are deleted in ascending order, and the number of bitplanes to be deleted (k) is determined by comparing code length of coded data, i.e. $\sum L(C(N_{\max}-k))$, referred to as A in the Kishi reference, with a threshold T , T is referred to as “designated code length B ” in the Kishi reference**).

Regarding claim 13, the combination of Fukunaga, Tong, and Kishi discloses the apparatus according to claim 12. The Fukunaga, Tong, and Kishi combination does not expressly teach wherein the threshold T differs in the first coding mode and the second coding mode. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to use different threshold values for Inter-frame coding (first coding mode) and intra-frame coding (second coding mode), because an intra-frame

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coding codes a frame separately and also serves as the reference for the following inter-frames, while inter-frame coding codes only the differences between a frame and a preceding frame (Fukunaga, col. 1, lines 16-28).

Regarding method claim 14, program claim 15, and medium claim 16, the limitations of the claims are rejected for the same reasons as set forth in the rejection of claim 11 above.

Regarding claims 17-20, they are rejected as being the de-coding claims corresponding to the encoding claims 11, 14-16, since it has been held that a mere reversal of the encoding process involves only routine skill in the art.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fukunaga; Shigeru et al. (US 6282240 B1): picture coder, picture decoder, and transmission system.

Lei; Shaw-Min (US 6272180 B1): compression and decompression of reference frames in a video decoder.

Mukerjee, Kunal et al. (US 20050013365 A1): advanced bi-directional predictive coding of video frames.

Wu, Feng et al. (US 20040005095 A1): system and method for robust video coding using progressive fine-granularity scalable (pfgs) coding.

Van Der Schaar, Mihaela et al. (US 20020037048 A1): single-loop motion-compensation fine granular scalability.

Chen; Yingwei et al. (US 6480547 B1): system and method for encoding and decoding the residual signal for fine granular scalable video.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-5363. The examiner can normally be reached on Monday-Thursday, 7:00AM-4:30PM, ALT. Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed, can be reached on (571)272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

L.L.

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624